

subalpine fir mortality

Region 4

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s):

Origin:

Affected Area: Not Applicable

Acres Affected: 0

Narrative:

Decline and subsequent mortality of subalpine fir attributed to the subalpine fir mortality complex was first detected in the late 1980's in the Intermountain Region. Tree mortality peaked in the mid-1990's when over a million trees were affected by this complex. Although there are a number of fungal pathogens involved in this complex, the primary insects causing subalpine fir mortality is the western balsam bark beetle; *Dryocoetes confusus* and balsam woolly adelgid. Droughts, compounded by overstocked and overmature stand conditions, are contributing factors to subalpine fir decline.

In 2009, 82,100 subalpine fir trees died over 59,100 acres. This is a decrease from 2008 when 125,000 subalpine fir trees were killed over 87,350 acres. Most of the subalpine fir mortality was mapped in Wyoming on the Bridger-Teton National Forest (32,800 trees across 31,100 acres), the sixth consecutive year of high mortality in the subalpine fir. On National Forests in southern Idaho, high levels of subalpine fir mortality occurred on the Salmon-Challis (15,600 trees, 4,000 acres) and Caribou-Targhee (8,200 trees, 4,300 acres) National Forests. In Utah, the Uinta-Wasatch-Cache National Forest experienced 6,200 trees killed over 4,100 acres with an additional 5,700 trees killed across 3,500 acres on private land.

Aerial detection surveys may have underestimated the total amount of acres affected due to the masking effect of western spruce budworm defoliation. Tree mortality is often difficult to discern from heavy defoliation and may go undetected until after the outbreaks of western spruce budworm are over and the live trees refoliate.

annosus root disease

Heterobasidion annosum

Region 4 California (Alpine County, El Dorado County, Mono County, Nevada County, Placer County, Sierra County, Tuolumne County)

Colorado (Mesa County, Montrose County)

Idaho (Adams County, Bannock County, Bear Lake County, Bingham County, Blaine County, Boise County, Bonneville County, Butte County, Camas County, Caribou County, Cassia County, Clark County, Custer County, Elmore County, Franklin County, Fremont County, Gem County, Idaho County, Lemhi County, Madison County, Oneida County, Owyhee County, Payette County, Power County, Teton County, Twin Falls County, Valley County, Washington County)

Nevada (Carson City, Clark County, Douglas County, Elko County, Eureka County, Lincoln County, Lyon County, Mineral County, Nye County, Storey County, Washoe County, White Pine County)

Utah (Beaver County, Box Elder County, Cache County, Carbon County, Daggett County, Davis County, Duchesne County, Emery County, Garfield County, Grand County, Iron County, Juab County, Kane County, Millard County, Morgan County, Piute County, Rich County, Salt Lake County, San Juan County, Sanpete County, Sevier County, Summit County, Tooele County, Uintah County, Utah County, Wasatch County, Washington County, Wayne County, Weber County)

Wyoming (Fremont County, Lincoln County, Park County, Sublette County, Teton County, Uinta County)

Host(s): California red fir, Douglas-fir, Engelmann spruce, fir, grand fir, Jeffrey pine, lodgepole pine, ponderosa pine, subalpine fir, white fir

Survey Date: 09/21/2009

Damage Type(s): Mortality, Other damage

Survey Method: General Observation

Setting(s): Rural Forest

Origin: Native

Affected Area: This disease can be found throughout Region 4.

Acres Affected: 0

Narrative:

This fungal root disease can be found infecting host species throughout the Region. As a disease causing agent, the full ecological effects of this organism have never been evaluated over long temporal and spatial scales. However, by killing planted or naturally regenerated seedlings and saplings (particularly, ponderosa pine on dry sites), *H. annosum* can cause significant economic losses. This organism is also a saprophyte, and has a vital role in recycling dead trees, stumps, and roots.

Armillaria root disease

Armillaria spp.

Region 4 California (Alpine County, El Dorado County, Mono County, Nevada County, Placer County, Sierra County, Tuolumne County)

Colorado (Mesa County, Montrose County)

Idaho (Adams County, Bannock County, Bear Lake County, Bingham County, Blaine County, Boise County, Bonneville County, Butte County, Camas County, Caribou County, Cassia County, Clark County, Custer County, Elmore County, Franklin County, Fremont County, Gem County, Idaho County, Lemhi County, Lincoln County, Madison County, Oneida County, Owyhee County, Payette County, Power County, Teton County, Twin Falls County, Valley County, Washington County)

Nevada (Carson City, Clark County, Douglas County, Elko County, Esmeralda County, Eureka County, Humboldt County, Lincoln County, Lyon County, Mineral County, Nye County, Storey County, Washoe County, White Pine County)

Utah (Beaver County, Box Elder County, Cache County, Carbon County, Daggett County, Davis County, Duchesne County, Emery County, Garfield County, Grand County, Iron County, Juab County, Kane County, Millard County, Morgan County, Piute County, Rich County, Salt Lake County, San Juan County, Sanpete County, Sevier County, Summit County, Tooele County, Uintah County, Utah County, Wasatch County, Washington County, Wayne County, Weber County)

Wyoming (Fremont County, Lincoln County, Park County, Sublette County, Teton County, Uinta County)

Host(s): bristlecone pine, Douglas-fir, Engelmann spruce, grand fir, Jeffrey pine, limber pine, lodgepole pine, ponderosa pine, subalpine fir, sugar pine, western white pine, whitebark pine

Survey Date: 09/21/2009

Damage Type(s): Mortality, Other damage

Survey Method: General Observation

Setting(s): Rural Forest

Origin: Native

Affected Area:

Acres Affected: 0

Narrative:

Evidence of Armillaria root disease can be found throughout the Intermountain Region. However, the fungus functions primarily as a weak pathogen or saprophyte in most locations, causing little direct tree mortality. In Utah, it may act as a primary pathogen, killing mature and immature lodgepole pine and mature fir and spruce on cool, moist sites at high elevation.

balsam woolly adelgid

Adelges piceae

Region 4 Idaho (Adams County, Boise County, Custer County, Elmore County, Fremont County, Gem County, Idaho County, Lemhi County, Teton County, Valley County, Washington County)

Host(s): grand fir, subalpine fir

Survey Date: 10/16/2009

Damage Type(s): Branch flagging, Dieback, Discoloration, Mortality

Survey Method: Ground Survey

Setting(s): Rural Forest, Urban

Origin: Exotic

Affected Area:

Acres Affected: 3,840,000

Narrative:

While this introduced forest insect has been present in northern Idaho since 1983, its presence in southern Idaho was not verified until 2001 when it was found killing subalpine fir trees in residential areas of Cascade and McCall. Delimitation surveys were conducted in 2006, 2007 and 2008 by Idaho Department of Lands and Intermountain Region Forest Health Protection personnel to determine the distribution of balsam woolly adelgid (BWA) south of the Salmon River. As a result of these surveys, BWA was detected on state, private and Forest Service lands in an area bounded by Sturgill Peak on the Payette NF, the Trinity Mountains near Featherville on the Boise NF, Gibbonsville on the Salmon-Challis NF, and the Victor and Henrys Lake area on the Caribou-Targhee NF. Forest Health Protection staff established 60 long-term impact plots in 2008 across National Forests in southern Idaho. Subsets of these plots were monitored in 2009 to track changes in stand structure, balsam woolly adelgid impacts and population changes over time. Monitoring will continue in 2010.

black stain root disease***Ophiostoma wagneri***

Region 4 California (Alpine County, Mono County, Sierra County)

Colorado (Mesa County, Montrose County)

Idaho (Cassia County, Franklin County)

Nevada (Carson City, Churchill County, Clark County, Douglas County, Elko County, Esmeralda County, Eureka County, Humboldt County, Lander County, Lincoln County, Lyon County, Mineral County, Nye County, Pershing County, Storey County, Washoe County, White Pine County)

Utah (Beaver County, Box Elder County, Cache County, Carbon County, Daggett County, Duchesne County, Emery County, Garfield County, Grand County, Iron County, Juab County, Kane County, Millard County, Piute County, San Juan County, Sanpete County, Sevier County, Tooele County, Uintah County, Utah County, Wasatch County, Washington County, Wayne County)

Wyoming (Sweetwater County)

Host(s): common pinyon, singleleaf pinyon

Survey Date: 09/21/2009

Damage Type(s): Mortality

Survey Method: Ground Survey

Setting(s): Rural Forest

Origin: Native

Affected Area:

Acres Affected:3,050

Narrative:

Aerial detection and follow-up ground surveys have discovered about two-dozen black stain root disease centers in pinyon pine stands in the Intermountain Region. The disease is most prevalent in Utah and Nevada where pinyon pine is abundant. However, the disease infected pinyon pines occur on fewer than 1,500 acres in each state. The northern range of pinyon pine extends up into southern Idaho primarily occurring on Bureau of Land Management lands where approximately 50 acres are infected.

decline**Region 4**

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s): Not Applicable

Origin: Not Applicable

Affected Area:

Acres Affected:0

Narrative:

In 2006, permanent Evaluation Monitoring plots were installed in Region 4 to determine the cause of sudden aspen decline. Aerial survey data from 2005 was used to identify and establish 75-permanent plots in accessible symptomatic stands throughout the range of aspen in Utah, Nevada, and western Wyoming. In 2007, fifty-one additional declining aspen stands were surveyed in southern Idaho. In 2008, 76 plots were established in Montana, which showed less evidence of decline and dieback symptoms than monitored sites in the Intermountain Region. All established plots will continue to be monitored over time. Drought, succession to other vegetation

types-linked to fire exclusion, and damage to aspen suckers by grazing all affect the decline of aspen forests. Eventual synthesis of this report data with other survey data should provide more insight into the aspen decline phenomenon.

Aspen dieback and defoliation mapped by aerial survey decreased in 2009, down from 94,000 acres in 2008 to 48,800 acres in 2009. Moisture conditions continued to improve in most aspen sites in 2009 and this coupled with a reduction in defoliators may have contributed to the decrease in observed symptoms.

Douglas-fir beetle

Dendroctonus pseudotsugae

Region 4

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s): Not Applicable

Origin: Not Applicable

Affected Area:

Acres Affected:0

Narrative:

Douglas-fir beetle-caused tree mortality decreased across Region 4. In 2009, over 20,600 acres were affected compared to 38,900 acres in 2008. The majority of the 2009 Douglas-fir mortality was mapped in southern Idaho (21,200 acres) and Utah (17,300 acres). In southern Idaho, mortality occurred primarily on the Sawtooth, Salmon-Challis and Caribou-Targhee National Forests affecting 4,200, 3,800 and 1,600 acres, respectively. In Utah, tree mortality occurred primarily on the Dixie and Fishlake National Forests affecting 4,400 and 1,400 acres, respectively. Douglas-fir mortality continued to decrease on private lands in Utah from 2,500 acres in 2008 to 600 acres in 2009.

The total amount of acres affected may be underestimated due to the masking effect of western spruce budworm defoliation. Recent mortality may go undetected during the current flight year because moderately to heavily defoliated trees may appear dead from the air but re-foliate the following spring.

Douglas-fir tussock moth

Orgyia pseudotsugata

Region 4

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s): Not Applicable

Origin: Not Applicable

Affected Area:

Acres Affected:0

Narrative:

Minimal Douglas-fir tussock moth (DFTM) defoliation on Douglas-fir and subalpine fir was aerially detected in 2009.

Region 4 Utah (Beaver County)

Host(s): white fir

Survey Date: 09/21/2009

Damage Type(s): Defoliation, Mortality

Survey Method: General Observation

Setting(s): Rural Forest

Origin: Native

Affected Area: Near Indian Peak, 50 miles N of Lund, UT

Acres Affected:220

Narrative:

In Utah, the white fir defoliation and subsequent mortality that was reported from ground observation in 2008 remains static. Monitoring and some removal of infested fir trees to encourage aspen undergrowth occurred in 2009 and should be completed in 2010. The small infestation (220 acres) occurred on state, private and Bureau of Land Management lands in Beaver County.

fir engraver

Scolytus ventralis

Region 4

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s): Not Applicable

Origin: Not Applicable

Affected Area:

Acres Affected:0

Narrative:

In 2009, fir engraver beetle-caused true fir mortality and topkill increased slightly following four consecutive years of decrease. Aerial surveyors recorded over 6,100 acres of fir mortality in 2009, compared to 4,900 acres reported in 2008. Most of the mortality occurred on the Humboldt-Toiyabe National Forest in Nevada where fir mortality increased from 900 acres in 2008 to approximately 3,200 acres in 2009. Fir mortality was widely scattered with most of the mortality occurring on the Ely Ranger District where 700 trees were killed across 2,900 acres. No fir mortality was reported in the Great Basin National Park in Nevada compared to the 150 acres of scattered tree mortality, reported in 2008. In Utah, approximately 4,100 trees were killed across 1,900 acres, which occurred primarily on the Dixie (2,100 trees, 800 acres) and Manti-LaSal National Forests (1,100 trees, 600 acres).

forest tent caterpillar

Malacosoma disstria

Region 4

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s): Not Applicable

Origin: Not Applicable

Affected Area: Also include 12000 Unknown defoliation in Utah.

Acres Affected:0

Narrative:

Forest tent caterpillar-caused defoliation increased in Region 4. In Nevada, most of the forest tent caterpillar caused aspen defoliation occurred in the northern part of the state with 5,100 acres of defoliation reported on the Humboldt-Toiyabe National Forest compared to 800 acres reported in 2008. Approximately 500 acres of defoliation were mapped on private lands in Nevada compared to 100 acres in 2008. In Utah, defoliation increased slightly from 1,000 acres reported in 2008 to 1,200 acres of defoliation reported on the Uinta-Wasatch-Cache and Manti-LaSal National Forests in 2009.

gypsy moth

Lymantria dispar

Region 4 Idaho (Madison County)

Host(s): No data

Survey Date: 09/21/2009

Damage Type(s): No damage

Survey Method: Ground Survey

Setting(s): Rural Forest, Urban

Origin: Exotic

Affected Area:**Acres Affected:**0**Narrative:**

The first gypsy moth outbreak detected in Region 4 occurred in Utah in 1988. Gypsy moth populations were subsequently eradicated. Since then, single male moths have been captured in various locations throughout the Region annually. In 2009, one male moth was captured in detection-trapping grids in Rexberg, ID. Nevada, Utah and Wyoming did not report any new male moths caught in 2009 detection or delimitation traps.

Delimitation trapping occurs for two years following a male moth capture in detection traps. No moths were captured in the 2007 or 2008 delimitation trap sites in Idaho and Utah. The 2008 capture sites were Meridian, ID (Ada County), Kamas, UT (Summit County) and Orem City, UT (Utah County). In 2010, a delimitation-trapping grid will be installed around the 2009 male moth capture site in Rexberg with second year delimitation traps installed in the vicinity of the 2008 capture sites.

Jeffery pine beetle***Dendroctonus jeffreyi*****Region 4****Host(s):****Survey Date:** 09/21/2009**Damage Type(s):** No Data**Survey Method:** GIS Data to FHTET (Insect & Disease Survey, etc.)**Setting(s):** Not Applicable**Origin:** Not Applicable**Affected Area:****Acres Affected:**0**Narrative:**

In 2009, Jeffrey pine beetle-caused tree mortality decreased. Scattered mortality of approximately 600 trees was mapped over 400 acres compared to 1,150 dead trees recorded across 2,100 acres in 2008. Most of the Jeffrey pine mortality occurred on the Bridgeport and Carson Ranger Districts of the Humboldt-Toiyabe National Forest and on private lands along the California-Nevada border.

mistletoe

Region 4 California (Alpine County, El Dorado County, Mono County, Nevada County, Placer County, Sierra County, Tuolumne County)

Colorado (Mesa County, Montrose County)

Idaho (Adams County, Bannock County, Bear Lake County, Bingham County, Blaine County, Boise County, Bonneville County, Butte County, Camas County, Caribou County, Cassia County, Clark County, Custer County, Elmore County, Franklin County, Fremont County, Gem County, Idaho County, Lemhi County, Madison County, Oneida County, Owyhee County, Payette County, Power County, Teton County, Twin Falls County, Valley County, Washington County)

Nevada (Carson City, Clark County, Douglas County, Elko County, Esmeralda County, Eureka County, Humboldt County, Lincoln County, Lyon County, Mineral County, Nye County, Storey County, Washoe County, White Pine County)

Utah (Beaver County, Box Elder County, Cache County, Carbon County, Daggett County, Davis County, Duchesne County, Emery County, Garfield County, Grand County, Iron County, Juab County, Kane County, Millard County, Morgan County, Piute County, Rich County, Salt Lake County, San Juan County, Sanpete County, Sevier County, Summit County, Tooele County, Uintah County, Utah County, Wasatch County, Washington County, Wayne County, Weber County)

Wyoming (Fremont County, Lincoln County, Park County, Sublette County, Teton County, Uinta County)

Host(s):bristlecone pine, California red fir, Douglas-fir, grand fir, Jeffrey pine, limber pine, lodgepole pine, ponderosa pine, subalpine fir, sugar pine, western larch, western white pine, white fir, whitebark pine

Survey Date: 09/21/2009**Damage Type(s):** Dieback, Mortality**Survey Method:** Ground Survey**Setting(s):** Rural Forest, Urban

Origin: Native

Affected Area:

Acres Affected:0

Narrative:

These plant parasites remain the most widespread and frequently observed disease within the Intermountain Region. Currently, dwarf mistletoe incidence information is updated using data gathered by the Forest Inventory and Analysis (FIA) group. The 2008 FIA data indicated that one or more dwarf mistletoe species were present at various levels of intensity on 15% of all plots surveyed. Incidence of the major dwarf mistletoe species by percent of host type infected within the Intermountain Region is as follows: lodgepole pine 26%, pinyon pine 20%, Douglas-fir 14%, ponderosa/Jeffrey pine 7%, limber pine 12%, and whitebark pine 6%. No FIA plots were located in infected Great Basin bristlecone pine stands.

mountain pine beetle

Dendroctonus ponderosae

Region 4

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s): Not Applicable

Origin: Not Applicable

Affected Area:

Acres Affected:0

Narrative:

Mountain pine beetle-caused tree mortality doubled in 2009 compared to the 2008 mortality estimate. In 2009, 11.5 million trees were killed across 2 million acres compared to 5.1 million trees killed across 1.3 million acres in 2008. While the amount of mortality is increasing, this increase reflects surveys conducted within several wilderness areas that have not been surveyed over the last 10 years. Even so, the reported tree mortality is new and does not include trees killed between the last recorded aerial survey in wilderness areas and 2009 surveyed acres. The majority of the mortality continues to occur in three distinct areas: central Idaho, western Wyoming and northern Utah.

In central Idaho, lodgepole, whitebark, limber and ponderosa pine mortality continues to increase with 9.0 million trees killed across 1.2 million acres. On the Salmon-Challis National Forest, which includes the eastern portion of the Frank Church Wilderness, 6.2 million trees were killed across 746,600 acres of which 5.3 million trees were killed across 612,700 non-wilderness acres compared to 1.8 million trees across 348,000 non-wilderness acres in 2008. Mortality of second growth ponderosa pine caused by mountain pine beetle (MPB) has increased dramatically on the Salmon-Challis National Forest. On the Sawtooth National Forest, which includes most of the Sawtooth Wilderness, 231,200 trees killed over 84,900 acres in 2009. The non-wilderness portion increased from 162,800 trees killed over 41,000 acres in 2008 to 217,900 trees killed over 80,300 acres in 2009. MPB has also increased on the Payette National Forest, which includes the western portion of the Frank Church Wilderness, with 1.1 million trees killed across 161,300 acres. The non-wilderness portion increased from 36,000 trees killed over 12,300 acres in 2008 to 169,200 trees killed on 34,700 acres in 2009. MPB caused tree mortality began to increase dramatically in central Idaho in 1998. This outbreak remains the largest recorded in the Region.

The second large outbreak area is located in western Wyoming affecting many forested portions of the Bridger-Teton National Forest including the wilderness areas, Grand Teton National Park, Bureau of Land Management areas in addition to state and private lands. Pine mortality in this area is comparable to 2008 with nearly 1.6 million trees killed across 445,000 acres compared to 1.5 million trees killed affecting nearly 500,000 acres in 2009. Ninety-three percent of the mortality mapped occurred on the Bridger-Teton National Forest, 32% of which occurred in wilderness areas.

The third outbreak area is located in northern Utah on the Uinta-Wasatch-Cache and Ashley National Forests which includes the High Uintas Wilderness. Over 954,900 trees were killed on 243,100 acres. In the non-wilderness portion, the MPB outbreak, which began in 2003, decreased slightly from 898,900 lodgepole and ponderosa pine trees killed over 261,000 acres in 2008 to 706,600 trees killed over 172,900 acres. Seventy percent of the mortality mapped in northern Utah occurred on the Uinta-Wasatch-Cache National Forest.

pine engraver

Ips pini

Region 4

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s): Not Applicable

Origin: Not Applicable

Affected Area:

Acres Affected:0

Narrative:

Pine engraver beetle-caused mortality remained relatively low across the region in 2009. Approximately 6,400 trees were killed across 2,200 acres in 2009 compared to 1,800 dead trees mapped over 900 acres in 2008. Pine engraver-caused tree mortality increased in Idaho with 6,200 trees killed across 2,100 acres compared to 1600 trees killed across 750 acres in 2008. Most of the mortality occurred on the Boise National Forest (5,600 trees, 1,800 acres). Elsewhere in the Region, mortality associated with pine engraver remained scattered with tree mortality remaining static.

pinon ips

Ips confusus

Region 4

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s): Not Applicable

Origin: Not Applicable

Affected Area:

Acres Affected:0

Narrative:

Historically, pinyon-juniper woodlands have not been surveyed annually in the Intermountain Region. An extended drought associated with an increase in pinyon ips populations occurred during 2001 and 2002, that resulted in a dramatic increase in pinyon pine mortality which initiated aerial surveys in this host type. By 2005, pinyon ips populations had collapsed to endemic levels. Most of the pinyon/juniper woodlands have not been aerially surveyed since 2004. Of the woodlands surveyed in 2009, 20,600 trees were killed across 84,900 acres in Nevada and Utah.

In Nevada pinyon mortality increased, 19,900 dead trees were mapped across 84,300 acres compared to 2,200 trees across 3,100 acres in 2008. The mortality occurred primarily on the following ownerships: private (12,000 trees, 28,900 acres), Bureau of Land Management (5,500 trees, 44,200 acres) and Humboldt-Toiyabe National Forest (2,300 trees, 10,900 acres).

In Utah, 500 trees were mapped across 400 acres compared to 1,100 trees mapped across 1,000 acres in 2008. The mortality occurred primarily on the Dixie National Forest with 300 trees killed over 300 acres.

pinon sawfly

Neodiprion eduliculus

Region 4

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s): Not Applicable

Origin: Not Applicable

Affected Area:

Acres Affected:0

Narrative:

A reported 132,900 acres of pinyon trees were defoliated by the pinon sawfly in Nevada. The Humboldt-Toiyabe National Forest and Bureau of Land Management lands were most affected, 76,100 and 56,100 acres, respectively. The last reported outbreak occurred in 1965; however, there have been periodic outbreaks on a much smaller scale (<100 acres). Although this is the first year it was aerially identified, subsequent ground visits indicate the defoliation had been occurring for the previous 2-3 years, resulting in some tree mortality in affected sites. Possible reasons for the sudden increased activity include drought, an abundance of host type, mild winters, low parasite/predator populations or some combination of conditions. In many locations, the sawfly defoliation is occurring in conjunction with pinyon scale defoliation. Heavily defoliated trees can be seriously stressed or killed. Additionally, ground visits identified some ponderosa pine sawfly, *Neodiprion fulviceps*- defoliation on the Manti-LaSal National Forest in Utah.

pinyon needle scale

Matsucoccus acalyptus

Region 4

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s): Not Applicable

Origin: Not Applicable

Affected Area:

Acres Affected:0

Narrative:

During the 2009 aerial detection survey, large areas of pinon needle scale were reported in Nevada and Utah, affecting 672,600 and 6,200 acres, respectively. The majority of defoliation occurred in Nevada on the Humboldt-Toiyabe National Forest (358,000 acres), Bureau of Land Management lands (283,500 acres) and private ownerships (30,400 acres). Pinyon scale was reported in 2008 in eastern Nevada; however, it wasn't until 2009 that it was visible from the air due to the extensive and severe defoliation.

Serious outbreaks of pinyon needle scale have occurred before in the Southwestern United States. Large pinyon trees with repeated infestations become susceptible to bark beetle caused tree mortality associated with *Ips confusus*. Scale infestations can kill small trees and seriously weaken larger trees as the affected needles drop from the tree. Thin crowns cause a ghostly see-through appearance of the forest. In many locations, this outbreak is occurring in conjunction with pinon sawfly, *Neodiprion edulicolus* defoliation.

spruce beetle

Dendroctonus rufipennis

Region 4

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s): Not Applicable

Origin: Not Applicable

Affected Area:

Acres Affected:0

Narrative:

In 2009, spruce beetle-caused spruce mortality continued to decrease with 36,300 trees mapped over 25,000 acres compared to 69,300 trees mapped over 25,800 acres in 2008. Over 75% of the spruce mortality occurred in Utah, where it was detected at some level on all National Forests. Relatively higher levels of mortality were mapped on the following National Forests: Uinta-Wasatch-Cache (12,200 trees, 8,900 acres), Dixie (6,400 trees, 2,800 acres), and Fishlake (5,900 trees, 5,800 acres). The Bridger-Teton National Forest in Wyoming also experienced spruce mortality with 8,300 trees killed on 4,900 acres. In 2009, only scattered and isolated spruce mortality was mapped in Idaho and Nevada.

western pine beetle

Dendroctonus brevicomis

Region 4

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s): Not Applicable

Origin: Not Applicable

Affected Area:

Acres Affected:0

Narrative:

In 2009, ponderosa pine mortality attributed to western pine beetle increased, but remains relatively low. Approximately 2,700 dead trees were mapped over 1,200 acres compared to 1,000 dead trees recorded across 500 acres in 2008. This mortality was mapped predominantly in Utah on private lands (1,300 trees, 400 acres) and in Idaho on the Payette National Forest (600 trees, 300 acres). Most of the mortality on the Payette National Forest is likely a result of a western pine beetle population increase following the 2007 fires.

western spruce budworm

Choristoneura occidentalis

Region 4

Host(s):

Survey Date: 09/21/2009

Damage Type(s): No Data

Survey Method: GIS Data to FHTET (Insect & Disease Survey, etc.)

Setting(s): Not Applicable

Origin: Not Applicable

Affected Area:

Acres Affected:0

Narrative:

Western spruce budworm-caused tree defoliation increased dramatically affecting 691,800 acres in Idaho and Utah in 2009 compared to 99,200 acres in 2008. In south-central Idaho, defoliation was reported across most land ownerships, with the highest amount occurring on the Salmon-Challis National Forest (221,200 acres). For the fifth consecutive year, the Boise National Forest experienced extensive defoliation (199,300 acres). Large areas of heavy defoliation in Idaho were also reported on the Payette National Forest (64,500 acres), Bureau of Land Management lands (38,000 acres), State of Idaho lands (31,100 acres) and private lands (22,500 acres). In Utah, large areas of heavy defoliation were reported on the Dixie National Forest (47,500 acres). No budworm activity was reported in Western Wyoming in 2009.